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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,481	09/02/2003	Kazuo Hakamata	Q77240	2062

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EXAMINER	
ROSENBERGER, FREDERICK F	
ART UNIT	**PAPER NUMBER**
2884	

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/652,481	HAKAMATA, KAZUO	
	Examiner	Art Unit	
	Frederick F. Rosenberger	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *08 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *6-11,14 and 15* is/are allowed.

6)☒ Claim(s) *1-5,12 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's response, filed 08 September 2005, has been received and entered. Accordingly, claim 1 has been amended and claims 12-15 have been added. Claims 1-15 are pending in this application.

Claim Objections

2. Claims 2 and 6 are objected to because of the following informalities:

In claim 2, line 2, "a number linearly arranged" should probably be -- a number of linearly arranged --.

In claim 6, line 9, it appears that the symbol for divergence has been inadvertently changed. The symbol "φ" should probably be changed to -- ϕ -- to correspond to the symbol in the equation in line 10 and in the original set of claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Own Admission of Prior Art (hereinafter referred to as AOAPA) in view of Li (US Patent # 6,759,662).

AOAPA discloses a line light source system for projecting a reading light beam onto an image recording medium, either an electrostatic recording medium (page 1, lines 9-24) or a stimulable phosphor sheet. The line light source consists of a linear array of light emitting diodes (LEDs) **101a** (Figure 8b). Optical means for converging light from the source in a direction perpendicular to the longitudinal direction of the source are provided in the form of cylindrical lenses **104** and **105**. A slit plate **102** with opening **102a** is provided adjacent to the light source.

However, AOAPA is silent with regards to the inclusion of a first and second pinhole array.

Li discloses a linearly formatted laser source **90** (Figure 6) in a fluorescence detection system, an optical means for converging the light bundles **94** emitted from the source **90**, in the form of cylindrical lens **96**, a first pinhole array (not labeled) between the cylindrical lens **96** and plate under test **110**, which limits the angle of divergence of the light bundles and wherein the pinholes are aligned with an optical axis of the light source, and a second pinhole array **94** with pinholes aligned with the pinholes of the first array, as shown in Figure 6. As Li points out, the inclusion of the pinhole arrays allows for improved sensitivity by reducing light scattering and interference (column 2, lines 63-67; column 3, lines 65-67).

Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to include a first and second pinhole array after the slit plate so as to reduce light scattering and interference caused by divergence of the light bundles from the light source and thereby improve detection sensitivity, as taught by Li. It would have further been obvious to one of ordinary skill in the art to align the optical axis of the light emitting elements of the array with the pinholes of the array as this would result in the maximum light intensity of the respective elements passing through the pinhole array.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over AOAPA and Li, as applied to claim 12 above, and further in view of Yamazaki et al. (Japanese Patent # 08110203-A).

AOAPA and Li disclose all the limitations of claim 12, as addressed above. However, AOAPA and Li are silent with regards to the first pinhole array comprising an anti-reflection layer.

Yamazaki et al. teach coating a pinhole **4** (Figure 1) with an anti-reflection layer, wherein the pinhole **4** is used to restrict the divergence of a laser beam **3** for illuminating an object under test **9**. As Yamazaki et al. point out, the use of this reflection layer helps prevent interference resulting from reflected light (see translated abstract).

Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to provide the first pinhole array with an antireflection

coating to prevent interference and improved detected signal results, as taught by Yamazaki et al.

Response to Arguments

6. Applicant's amendment of claim 1 has successfully overcome the rejection of claims 1-5 under 35 U.S.C. 103(a). However, a new rejection has been made in view of the amendment, as noted above.

7. Applicant's arguments, see page 8, 1st paragraph, filed 08 September 2005, with respect to the rejection of claims 6-11 under 35 U.S.C. 103(a) have been fully considered and are persuasive. The rejection of claims 6-11 has been withdrawn.

Allowable Subject Matter

8. Claims 6-11, 14, and 15 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter:

Claim 6 is directed towards a line light source system wherein an optical element is used to limit the angle of divergence of a light emitting element array to within a range dependent on the focusing distance and focal depth, as defined by the claimed equation. Although prior art systems do use lenses or apertures to limit the divergence

angle, the prior art fails to teach or reasonably suggest such an equation based on focusing distance and focal depth for determining the limit of the divergence angle.

Claim 14 is directed towards a line light source system wherein a single pinhole array limits the angle of divergence of the line light source to less than 10°. While prior art line light source systems employing pinhole arrays are known, the prior art fails to teach or reasonably suggest using the pinhole array to limit the divergence angle to less than 10°.

As such, applicant's disclosure provides a novel and nonobvious improvement over the prior art. Accordingly, the claims 6 and 14 and the associated dependent claims would be allowable.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick F. Rosenberger whose telephone number is 571-272-6107. The examiner can normally be reached on Monday-Friday 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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